

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A method for the commutation of electromechanical, commutatorless actuators, more particularly of permanent magnet motors and reluctance motors, having a rotor and a stator including at least one stator winding (W1, W2) that is/are operated with a constant current (I), ~~characterized in that~~ wherein
  - a reference constant current is applied to at least one winding (W1, W2) of the actuator,
  - a stationary state is awaited in which the rotor is at standstill,
  - a value that represents the voltage applied to the winding of the actuator in the stationary state is determined as the reference commutation value  $x_0$  for the commutation voltage,
  - and while the motor is running, the moment T is determined in which
    - in the case of an operation with the reference constant current, the reference value appears or is being passed by, or
    - in the case of an operating current that deviates from the reference current, a commutation value that is calculated from the reference value for the prevailing operating current appears or is being passed by,
  - and in that the commutation is effected a predetermined time difference after the moment T, which time difference is greater than or equal to zero and is chosen such that essentially no polarity change of the actuator torque occurs.
2. (Currently Amended) The method according to claim 1, ~~characterized in that~~ wherein the actuator comprises one or two windings (W1, W2).
3. (Currently Amended) The method according to ~~one of claims 1 or 2, characterized in that~~ claim 1, wherein the time difference is equal to zero.

4. (Currently Amended) The method according to ~~one of claims 1 to 3, characterized in that claim 1, wherein~~ the constant current ( $I_{PWM}$ ) is adjusted by repeatedly switching the supply voltage  $U_S$  on during a duration  $T_{ON}$  and off during a duration  $T_{OFF}$ , a switching ratio being equal to  $T_{ON}$  divided by the sum of  $T_{ON}$  and  $T_{OFF}$  ( $d = T_{ON} / [T_{ON} + T_{OFF}]$ ), and the reference commutation value being the reference switching ratio  $d_0 = T_{ON0} / (T_{ON0} + T_{OFF0})$  or a value that represents the latter.

5. (Currently Amended) The method according to claim 4, ~~characterized in that~~ wherein the reference commutation value is on-time  $T_{ON}$  while off-time  $T_{OFF}$  is constant.

6. (Currently Amended) The method according to ~~one of claims 1 to 5, characterized in that claim 1, wherein~~ during the measurement of the reference commutation value, the constant current is applied to all windings ( $W1$ ,  $W2$ ) of the actuator and the reference commutation values for the windings are measured individually in order to be able to perform the commutation at the respective commutation value that is determined for each winding.

7. (Currently Amended) The method according to ~~one of claims 1 to 8, characterized in that claim 1, wherein~~ after applying the reference constant current, a specified time  $T_{wait}$  is allowed to elapse after which the stationary state is reached.

8. (Currently Amended) The method according to ~~one of claims 1 to 6, characterized in that claim 1, wherein~~ after applying the reference constant current while the reference commutation value is being measured, one waits until the reference commutation value has no longer changed for a specified time in order to determine that the stationary state has been reached.

9. (Currently Amended) The method according to ~~one of claims 1 to 8, characterized in that claim 1, wherein~~ in the case of an operating constant current  $I_S$  that deviates from the reference current  $I_0$ , the momentary commutation value  $x$  is calculated from the reference value  $x_0$  by means of the formula:

$$x = x_0 * I_S / I_0.$$

10. (Currently Amended) The method according to ~~one of claims 5 to 9, characterized in that~~ claim 5, wherein the sum  $T_{CH0}$  of the off-time  $T_{OFF0}$  and the on-time  $T_{ON0}$  that are applicable for the commutation is kept constant such that  $T_{ON0}$  is proportional to switching ratio  $d_0$  in order to allow a simpler conversion of  $T_{ON0}$  to different operating conditions, more particularly a different operating current and/or voltage.

11. (Currently Amended) The method according to claim 10, ~~characterized in that~~ wherein the value of  $T_{ON0}$  is set to a value that is convenient for a binary computing unit by varying the sum  $T_{CH0}$  during a measurement of the reference commutation value while the motor is at standstill, more particularly a value near the maximum value of the numerical range of the computing unit and/or a value near an integral power of 2.

12. (Currently Amended) The method according to ~~one of claims 4 to 11, characterized in that~~ claim 4, wherein when supply voltage  $U_S$  varies, the sum  $T_{CH}$  of on-time  $T_{ON}$  and off-time  $T_{OFF}$  for the commutation switching ratio is determined by means of the formula

$$T_{CH} = \frac{U_S}{U_{S0}} \cdot T_{CH0}$$

where  $T_{CH0}$  is the sum of the reference switching ratio and  $U_{S0}$  is the supply voltage during the measurement of the reference switching ratio.

13. (Currently Amended) The method according to claim 12, ~~characterized in that~~ wherein off-time  $T_{OFF}$  is determined as the difference between switching time sum  $T_{CH}$  and on-time  $T_{ON}$  while  $T_{ON}$  is not being varied.

14. (Currently Amended) A device for commutation of electromechanical, commutatorless actuators having a rotor and a stator including at least one stator winding (W1, W2) operated with a constant current (I) comprising: Device for implementing the method according to one of claims 1 to 13, characterized in that

drivers (D1, D2) for supplying the windings (W1, W2) ~~of a commutatorless electromechanical actuator~~ with a constant current and a control unit (1) comprising a digital processor and a memory ~~are provided~~, wherein the drivers (D1, D2) receive a control signal from the control unit (1) which determines the current in the associated winding and the control unit receives a respective signal (8) from each driver, which signal is a measure of the voltage applied to the winding,

wherein a program for controlling the processor ~~[[being]]~~ is stored in the memory upon whose execution by the processor ~~the control unit (2) performs the method:~~

- a reference constant current is applied to at least one winding (W1, W2) of the actuator,
- a stationary state is awaited in which the rotor is at standstill,
- a value that represents the voltage applied to the winding of the actuator in the stationary state is determined as the reference commutation value  $x_0$  for the commutation voltage,
- and while the motor is running, the moment T is determined in which
  - in the case of an operation with the reference constant current, the reference value appears or is being passed by, or
  - in the case of an operating current that deviates from the reference current, a commutation value that is calculated from the reference value for the prevailing operating current appears or is being passed by,
  - and in that the commutation is effected a predetermined time difference after the moment T, which time difference is greater than or equal to zero and is chosen such that essentially no polarity change of the actuator torque occurs.

15. (Currently Amended) Application of the method according to ~~one of claims 1 to 13~~ claim 1 for the vibration-free control of servomotors, more particularly of low power servomotors in vehicles such as actuators for ventilation flaps, hydraulics, pneumatics, and headlights.